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SCIENCE & GOVERNMENT REPORT

The Independent Bulletin of Science Policy

Vol. IX, No. 6 | P.O. Box 6226A, Washington, D.C. 20015 | April 1, 1979

Carter Issues First Science-Policy Message

The Message on Science and Technology that Mr. Carter sent to Congress on March 27 contains almost nothing that he or his deputies have not said before. Science and technology, it asserts, are integral to the success of all sorts of things that are desirable, and, therefore, they merit support and prudent management.

Since the message was voluntarily offered—rather than mandated by Congress, as is the case with so many other presidential messages to Capitol Hill—the main matter of interest, therefore, is not what's he saying, but why is he saying it.

On the trail of the answer, the first observation to make is that the President's often-stated interest in research-related matters has never required external priming. Though veils of officialdom and public-relations guile make it difficult to know with certainty just what it is that presidents really feel or think on any subject, there are many reasons to conclude and no reasons to doubt that Jimmy Carter strongly believes in the potency of science and technology for dealing with many of the problems that beset this country. They're not the whole answer, as he has often said, and does so again in the message, but they can help in ways that are otherwise unattainable.

Califano Gives NIH
A Sudden Pep Talk---Page 6

This being his strong belief, Carter, from the beginning of his Administration, has sought to pump extra money into basic research, which is both a lean and apolitical enterprise; at the same time, he has tried to reorient, though not necessarily to spend more money on, applied and developmental research—which are the big spenders and often the objects of political grabs in the government's $30-billion-a-year R&D budget. Thus, in the two annual budgets that were wholly of his own making, he included big boosts for academic basic research, while trying to cut back on costly demonstration projects that are charged to R&D accounts. In short, he's been trying to orchestrate a vast and disparate enterprise.

The difficulty with this approach is that, while it makes sense from the perspective of the Executive Office Building, it has tended to unravel on Capitol Hill, where, in fact, there is no such thing as a committee with jurisdiction over all of the government's research and development activities. Though there has been some consolidation in recent years, R&D, nonetheless, is sprawled among a dozen or more committees and subcommittees in the House and Senate. And, as is the case with most federal activities, the R&D agencies and their congressional overseers tend to form alliances, or at least get cozy with each other for practical purposes, to the detriment of White House coordination. A frequent product of this is that at the conclusion of a Congressional session, the R&D policy plans that were neatly spelled out in the President's budget do not much resemble what the legislators have chosen to approve.

The most striking example of this is to be found in

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How to Get a Copy of Message

Copies of the President's Message on Science and Technology may be obtained, without charge, from: The Office of Science and Technology Policy, Executive Office Building, Washington, DC 20503.

In Brief

So far, so good for the National Science Foundation's quest for its first billion-dollar budget. The budget request has been reviewed by NSF's authorizing committees in the House and the Senate, and, in both cases, the Foundation not only got what it asked for, but an additional few millions were added on. Still to be heard from, however, are the appropriations subcommittees, which actually vote the money. They tend to be tougher.

The Senate Subcommittee on Science, Technology, and Space is set to blast the Carter Administration for what Committee Chairman Adlai Stevenson and Ranking Republican Harrison Schmitt consider a passive and inadequate space program. Each has introduced a bill for an operational remote sensing satellite system. Hearings are scheduled April 9 and 11. Witnesses will include White House Science Adviser Frank Press and NASA Administrator Robert Frosh.

The Administration's proposed Institute for Technological Cooperation faces a possible hitch in the Senate: Foreign Relations Chairman Frank Church, facing a tough re-election campaign in Idaho and suddenly talking Prop 13 pennypinching, has raised the question of whether this is the time to start up a new government venture.

. . . Seeks Strong Support for Basic Science

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Mr. Carter's carefully wrought plans last year to provide a "real" budget increase of nearly five per cent for basic research.

Because inflation was higher and Congress stingier than was anticipated by the budget writers, the actual increase for basic research fell considerably below the goal. Meanwhile, the failure to provide basic research with the money that the Administration deemed of vital importance was accompanied by a variety of other Congressional departures from what Carter and his science aides had charted as the course of wisdom.

Defense R&D suffered a big cut—some $328 million from the Administration's request—while the National Institutes of Health was voted $351 million more than the amount sought by the President. Capitol Hill was full of agitation for a bigger space program and for the fast-breeder reactor, both of which the Administration considered undesirable.

When the 95th Congress finally ended, and the results were tallied, the people who look after science-related matters for Mr. Carter did a post-morten and concluded that their difficulties were mainly in salesmanship, rather than in product. The conclusion, as one of them explained it several weeks ago to SGR, was that the Administration was doing a good job of formulating science and technology policy, but was falling down in getting Congress to understand its methods and goals. In the new Congress, it was vowed, a stronger effort would be made to get the word to the members. The Message on Science and Technology is central to that effort.

Written in the Office of Science and Technology Policy, and then filtered through the President's inner staff circle before official release, the Message is the first of its kind since Richard Nixon, back in 1972, issued what the White House then described as "the first Presidential message on Science and Technology in the nation's history." Denied the opportunity for a first, Mr. Carter's Message takes off from the premise that "the federal government has rarely articulated a science and technology policy for the future. This Message sets forth that policy."

Nothing on Share of GNP

Altogether omitted from the President's Message on Science and Technology—it's not even raised for the purpose of knocking it down—is any discussion of the proportion of gross national product devoted to R&D.

The measure may be a meaningless one, but it regularly figures in most serious discussions of national science policies; it is routinely tallied by NSF in its compilations of US government R&D spending; it makes a regular appearance in the National Science Board's biennial *Science Indicators* series, and it is one of the key measures in the statistical tables of the 24-nation Organization for Economic Cooperation and Development. To discuss science policy without reference to what proportion of national wealth is devoted to R&D—well, that's akin to discussing inflation without mentioning prices.

"Policy" being a word that Washington has abused to the point of meaninglessness, it is perhaps unfair to point out that the Message only in small part matches up to the dictionary definition of policy as "a principle, plan, or course of action"; most often, rather, it seems the Message is a blend of hope, wishful thinking, and exhortation, as when, for example, the President states, "In transmitting this message, I call on the Congress to join my Administration in its commitment to nonpartisan investment in science and technology for our future."

Written in characteristically bland Carterese, the message takes as its starting point "The thesis . . . that new technologies can aid in the solution of many of our Nation's problems. These technologies in turn depend upon a fund of knowledge derived from basic research. The Federal government should therefore increase its support both for basic research and, where appropriate, for the application of new technologies."

And the message then is off and running with a sub-

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©Science & Government Report, Inc., 1979

ISSN 0048-9581

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Independently published by *Science & Government Report,* Inc., twice monthly, except once each in January, July and August. Annual Subscription: Institutions, $84.50 (two years, $149.50); individuals, $44 (two years, $75). Editorial offices at 3736 Kanawha St., N.W., Washington, DC 20015. Tel. (202) 244-4135. Second class postage paid at Washington, DC. Please address all subscription correspondence to Box 6226A, Northwest Station, Washington, DC 20015. Reproduction without permission is prohibited. SGR is available on Xerox University Microfilms.

. . . Academic Job Plight Gets Slighted

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ject-by-subject review of Federal R&D interests, from "Stimulating Innovation in Industry" to "Building our Defense Research Base." Throughout, the theme is that basic research must be boosted while opportunities for technological development must be carefully selected and apportioned, as appropriate, between government and the private sector.

Elsewhere in this issue, we present in some detail the key points of the Message. From here on, then, we'll deal with other matters, namely: what's left out or underplayed (actually little is left out) and what validity is there to the assumption that Congress will be more cooperative with the Administration's R&D desires if only Congress gets a better understanding of them.

Curiously neglected in the Message is a problem that many of the Administration's top science-policy officials—prominent among them White House Science Adviser Frank Press and NSF Director Richard Atkinson—have repeatedly identified as one of the most difficult and serious issues of the moment: jobs and research support for young scientists. As can be seen in the accompanying table, taken from an NSF report on academic hirings of PhD holders less than seven years out of school (SGR Vol. IX, No. 5), the proportion of these youngsters on graduate faculties is, with rare exception, considerably below the one-third mark that's generally considered desirable. And NSF says the decade-long decline in such hirings is apparently continuing.

Nevertheless, the President's Message makes no direct reference to this problem, and simply disposes of it by noting, "I have asked the [National Science] Foundation . . . to investigate the need for special programs to support young scientists." That's an interesting, even encouraging, bit of news, but it's quite remote from being a policy.

Another item that's neglected, though not omitted, has to do with the roiling question of public participation in science-policy affairs. This is a topic much on many minds these days, and its champions include such influential people as Senator Edward Kennedy and HEW Secretary Joseph Califano. The push for public participation has already manifested itself—to the dismay of many traditionalist scientists—in requirements for a substantial public presence on boards reviewing recombinant DNA research. Public participation is a big and complicated subject, and it can be plausibly argued that it may actually be the central issue in contemporary science-policy affairs; that in all sorts of ongoing controversies—ranging from saccharin to the breeder reactor—the real issue is whether the citizenry is going to take part in decisionmaking, or at least have an effective awareness of what's going on, or whether anonymous specialists are going to decide these things for the general public.

Full-time doctoral faculty and recent doctoral faculty in selected doctoral science/engineering departments: 1978

Field	Doctoral faculty: Number of depts.	Doctoral faculty: Recent doctorates: Total	Doctoral faculty: Recent doctorates: Number	Doctoral faculty: Recent doctorates: Percent
All selected departments	1,809	35,962	8,652	24
Biochemistry	129	1,746	294	17
Biology	134	3,132	724	23
Botany	50	842	139	17
Chemical engineering	96	994	208	21
Chemistry	183	3,994	690	17
Economics	115	2,468	845	34
Electrical engineering	113	2,355	479	20
Geology	97	1,319	305	23
Mathematics	151	4,845	1,298	27
Microbiology	122	1,385	328	24
Mining & mineral engineering	11	108	25	24
Physics	156	3,781	488	13
Physiology	104	1,505	405	27
Psychology	174	4,344	1,382	32
Sociology	121	2,140	775	36
Zoology	47	998	259	26

The President's Message takes up this subject two pages from the end of the 30-page document; the topic, however, is altogether left out of a six-page "Fact Sheet" summary that the White House issued along with the Message.

What the Message says is as follows: "We must strive to increase public understanding and participation in our scientific and technology activities. The changes induced by science and technology are infused in the fabric of our society, profoundly altering the way we live. The understanding of those changes and their causes, as well as successful adaptation to them, requires an informed citizenry. I have supported measures, such as intervenor funding, that contribute to informed public participation in decisions where technology is important." And that's it.

A notable feature of the message is that it quietly provides an epitaph for the Nixon-initiated "War on Cancer."

"As we have learned from the emphasis on cancer over the last decade," says Mr. Carter, "advances

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Major Points in President's Science Message

Following are some highlights from the President's Message on Science and Technology:

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Stimulating Innovation in Industry: A soon-to-be completed domestic policy review is expected to produce "many practical recommendations to help make our industries more innovative." Meanwhile, a newly established Productivity Council, consisting of senior government officials, "is examining how science and technology can improve Federal, State, and local government productivity, as well as the productivity of the private sector.

Energy: Present R&D activities "can have only a limited impact" on the energy problem, but "In the mid- to longer-term . . . science and technology will help resolve our current dilemma . . . We must carefully structure the Federal programs in a way that will lead industry to invest in, and ultimately commercialize, new energy technologies."

Nonfuel Minerals: The Secretary of the Interior is conducting a major study of "The adequacy and orientation of private sector and government investment in minerals research and development. . ."

Agriculture: The newly established competitive research program "merits strong Congressional support" as a supplement to existing R&D activities in this area.

Improving the Regulatory Process: ". . . continued investment in science and technology is required to improve our regulatory programs . . . To ensure that we make effective use of science and technology in the regulatory process, I am asking the Director of the Office of Science and Technology Policy to give this issue personal attention in the coming year. He is to work with the heads of agencies, the Chairman of the Regulatory Council, and others to identify gaps in research programs, seek ways for research and development agencies to work with regulatory agencies, and develop procedures for proper use of scientific and technological data."

Expanding the Beneficial Use of Space: "We will emphasize applications not only by NASA, but also by other Federal agencies, foreign governments, and the private sector. The policy stresses the use of space technologies to meet human needs here on earth . . . I am committed to the continuity of remote sensing data over the coming decade and I expect to propose additional initiatives in remote sensing of the earth's ocean, land resources, and environment in future years."

Pursuing New International Initiatives: "As the cost of large-scale research programs and research facilities rise, all countries find the financial support increasingly burdensome. We must join together to support the most expensive and significant projects. We are discussing with other nations a program to drill deeply into the offshore continental margins between the continental shelves and the ocean basins . . . Other large-scale scientific programs that could be pursued jointly include the next generation of high-energy physics accelerators, telescopes, and fusion-energy research facilities."

Developing Scientific Exchanges: "I expect to see continuing improvement in the quality of our exchanges with the Soviet Union. I also expect these programs to support and remain compatible with our overall politi-

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depend on new discoveries whose rate cannot be predicted. Therefore, we must nurture a broadly based program of research, with a clear, long-term commitment." (In such ways, it should be observed, do government R&D policies come and go. The National Cancer Program was explicitly designed as a broadly based program of research, with a clear, long-term commitment.)

In any case, while the Message isn't going to retard Congress's understanding of the Administration's thoughts and desires for R&D, it would be wondrously naive to assume that the legislators have failed to cooperate with Mr. Carter's R&D designs for lack of clear understanding of said designs.

Where they have rebuffed him—as in their decision to pile on the money for NIH last year—it was because they didn't share his sense of values and priorities. And it is quite possible that some of the legislators are going to feel peeved about some of the language of the Message, as, for example, in the section where Mr. Carter blithely speeds through the complex and controversial issue of just how much ought to be spent on biomedical research. Thus, after briefly explaining the demise of the big cancer program, the Message states:

"Accordingly, in view of the substantial increases provided by Congress last year above my requested increase, I believe an effective biomedical research effort can be maintained without any further increase in 1980. This pace for biomedical research is appropriate," the Message states, adding that funding for NIH will rise by an annual average of 12 per cent this fiscal year and next.

The President's Message on Science and Technology was delivered to Congress on the day after the Sadat-Begin treaty-signing ceremony, which coincided with a full-blast schedule of Congressional committee hearings. Whether anyone on Capitol Hill is taking note of the message is hard to say at this point.—DSG

. . . Carter Backs Defense-Academic Ties

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cal relationship."

Maintaining Technological Leadership in Weapons Systems: "It is absolutely essential for us to remain second to none in the development and production of new weapons."

Building our Defense Research Base: "The Department of Defense is taking steps to strengthen its relationship with universities in order to use the research and development resources of the academic community more effectively. Defense support of university research will have increased more than 20 per cent between fiscal years 1978 and 1980."

Preventing Export that Erodes our Technological Superiority: ". . .the export control process must seek to balance the conflicting goals of trade promotion, selected trade restriction based on national security considerations, and furthering our foreign policy objectives . . . I must emphasize, however, that while sound export controls are important, only a strong research and development program, as I have proposed, ensures our technological superiority in defense."

Harnessing the National Capability: In government support of university-based research, "We should not confuse excess paperwork with proper accountability . . . It is clear . . . that our partnership with universities needs further strengthening. We must continue to experiment with new approaches . . . Within the budgets I have proposed for Federal research and development, I expect the needs of State and local governments to be addressed. Federal R&D programs should be formulated with participation by State and local governments . . . I am directing the [Intergovernmental Science, Engineering, and Technology Advisory] Panel to increase its efforts in planning technical assistance and research and development for problem-solving." Closer ties should be encouraged between universities and industry. "The National Science Foundation is beginning to experiment with projects that involve cooperative activities by people in industry and universities. Other efforts to strengthen the partnership are needed in the years ahead."

Stresses Long-Term Support

The President's Message closes with a strong appeal for "continuity and consistency in our support and policies" for research and development. But it offers no specific recommendations for achieving this, nor does it directly raise such frequently discussed suggestions as multi-year funding for R&D.

Instead it simply sermonizes with such pedestrian observations as, "If research and development activities are started and stopped abruptly, the chance of their success is diminished and the probability of benefits to the Nation decreased. The Congress and the Administration must join in recognizing the long-term nature of many research and development activities. Together we must provide the necessary assurances and commitments."

Directory of Ongoing R&D

There's a new directory, *Information Services on Research in Progress: A Worldwide Inventory,* that lists 197 information centers, in 53 countries, that provide data on ongoing research projects. The directory was compiled by the Smithsonian Science Information Exchange and prepared in cooperation with UNESCO; the National Science Foundation paid for it.

Copies are available from the National Technical Information Service, 5285 Port Royal Road, Springfield, Va. Hardcover: $14.50 each; microfiche: $3. Request publication No. PB-282 025/AS

US Researchers in China

The flow of American researchers to China under an agreement signed last November has begun and is expected to expand as language training for the Americans progresses.

According to an announcement from the US Committee for Scholarly Communication with the People's Republic of China, the first of six Americans scheduled for three-to-nine month research visits to China left in mid-March. She's Lucile M. Jones, of MIT, who is going to study geological foreshock behavior of earthquakes for three or four months.

Seven American scholars started language training in Peking in February, and, upon completion of the course, will attend graduate programs at Chinese universities. The Committee will soon announce the selection of an additional 50 scholars who will begin visits to China next September.

The Committee is sponsored by the Social Science Research Council, the American Council of Learned Societies, and the National Academy of Sciences, from whose Washington, DC, premises it operates.

Califano Sweet-talks the Staff at NIH

On March 8, on very short notice, Health, Education, and Welfare Secretary Joseph A. Califano Jr. whizzed out to the Bethesda, Md., campus of the National Institutes of Health and delivered to an assemblage there what can best be described as a friendly pep talk. No policy revelations were delivered in the course of this address, which was announced late one afternoon and presented at 9 the following morning. Nonetheless, since Califano is the most rambunctious HEW chief yet to confront biomedical research, and he's got NIH deep into a scheme for devising a five-year master plan for the health sciences (SGR Vol. VIII, No. 17), we think it useful to keep track of this man, and, therefore, offer the following excerpts from his address:

. . .I am very conscious of my responsibility to protect this institution. There's no way to protect it from politics in the sense of human aspiration, human desires to be healthy, to be better, to solve our biomedical problems . . . But it is important to protect this institution from the more partisan kind of political activity, the more self-centered, the more ambition-centered kind of political activity . . . It's also important . . . to provide some insulation from the kind of disease-of-the-month attitude that so often attends the funding of programs in the scientific area.

. . .I'd like to talk to you about . . . the challenge of maintaining excellence as the Institutes move in some new and somewhat unfamiliar directions . . . beyond the traditional biomedical context into other fields: Health-care research, technology assessment, environmental inquiries across a whole host of areas . . . Can we establish more effective links between the research enterprise here at NIH and the roles of other agencies? . . . Can we do all these things without compromising our basic research efforts, the science base on which all other research efforts must rest? For basic research is the bedrock, and our commitment to it must be firm and unshakable. These new questions, tnese new areas to which you must address yourselves must be incrementally added to what you're doing, not substituted for the basic research that is now conducted here, and will continue to be conducted here, and will be conducted in some of those areas. . .

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[NIH's] excellence must not be taken for granted. Excellence in our society is very precious. In a society that is awash in mediocrity like our own, it's truly a gem. And in a government so plagued by some of the problems of bureaucracy in the worst sense of that term, it is indeed perhaps the most precious asset we have . . . I believe that the Institutes are robust, sufficiently robust, to broaden the fields of excellence. Indeed, the very challenge may be critical to maintaining the vitality and creativity which are an essential part of excellence.

. . .confronting us is the challenge of maintaining high quality in the face of constricted budgets and limited resources. I am convinced personally that there is no greater threat to the quality of American life than the slow starvation of our national research enterprise. The threat is all the more dangerous because it is not widely understood, it is not easily seen . . . and because there is an ambience of eliteness about it . . . And it is quite clear to me that in one way or another as we go to reauthorize higher education [legislation] this year, we must find a way to systematically put into our laws and our government's support some method of financing the rebuilding of our physical capability at some of these key research universities. We have to be wise enough as a nation to recognize that that is not an investment in eliteism, that it is an investment in the egalitarian health and welfare of our country . . . We cannot have first-rate science if research facilities are permitted to decay, if the opportunities for young scientists are not constantly renewed and made available. . .

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To be sure, the 1980 NIH budget is austere, but as we look over the period from '77 to '80, we see an increase of about 25 per cent . . . An institution like this can stand a period of belt-tightening . . . But we cannot permit an era of chronic malnutrition.

Meanwhile, in the coming year or 18 months, it is essential for the people here to do as much as you can with the resources that are available. This reality is one reason . . . that I called upon the research community last April to join in developing a multi-year strategy for health research . . . The alternative to such a strategy, in my judgment, is a kind of haphazard jungle warfare for limited resources . . . Let me give one example of what I think we may have lost for lack of having some kind of five-year plan this year. When one goes to set the budget in the reality of the budget process, either within the government itself or with the government vis-a-vis the Congress, there's no goal out there, there's nothing that says, this is a five-year plan and you need $3.5 billion this year, $3.7 or $4 billion. In a rough sense, there is no set of principles in which a general public-policymaker who feels responsible for the breadth of the research effort can say, this is something against which we must measure what we legislate, what we appropriate, what we give.

I think we would have been much better off and

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HEW Chief Says It's Permissible to Disagree with Him

The banishment last year of Gio Gori, of the National Cancer Institute, after he publicly suggested that presentday cigarettes are less hazardous—though certainly not safe— than those of 15 years ago (SGR Vol. VIII, No. 15) would not seem to harmonize well with HEW Chief Joe Califano's repeated pledges about "depoliticizing" the National Institutes of Health. The subject was raised and replied to as follows during Califano's March 8 address at NIH:

Califano: . . . your allusion may be to Dr. Gori and the cigarette issue. Whatever research shows, research shows. And that's fine with me. My function in life is not to affect what the facts are or what your judgments are. You should in no way feel inhibited. I haven't noticed, by and large, that you do feel inhibited . . . This is essentially, and should be, an independent research institution. The fact that you are funded by the federal government should make people like me all the more sensitive to not interfering in that area, and you are free to speak . . . I've spent most of my life as a lawyer, and most of that period of time in the First Amendment area, so I have a very strong sense of the importance of people speaking out . . . I also have a very strong sense of the importance of freedom in the academic area, and that's essentially what you are engaged in . . . I want you to feel absolutely free to write, speak, lecture as to what you believe to be correct in the scientific work you're doing, because if you don't, you don't serve this country well, you don't serve me well, you don't serve yourselves well."

CALIFANO *(Continued from Page 6)*

would have been able to make much more informed decisions . . . had we had that kind of a goal to shoot for, and had we had a sense of what that prospect would look like in real terms over a five-year period . . . I think we'll be much better off next year if, when we go to formulate a budget, or the Congress goes to review a budget, it can say, this is the kind of optimum that the scientific community feels exists.

Science & Government Report International Almanac

Pre-publication orders, at a substantially reduced price, are now being accepted for the new edition of SGR International Almanac. Following upon the first edition, which was published last year, the forthcoming volume will consist of original review articles on science-policy developments in all the industrialized and major developing countries, plus the texts of major science-policy documents issued over the past year. Written by leading science-policy specialists from over 20 countries, SGR International Almanac has won wide acclaim as a standard text in its field.

SGR International Almanac is "a needed book for all those who want a broad picture of science policy" — H. Guyford Stever, Director, National Science Foundation, 1972-76.

The SGR Almanac "is indispensable to any serious student of science policy" — Edward E. David Jr., White House Science Adviser, 1970-73, currently President of the AAAS and President of Exxon Research and Engineering Corp.

Publication is scheduled for June 1979, at which time the price per copy will be $75.

Pre-publication orders are now being accepted at $54 per copy, or, in combination with the first edition, at $85 for the two volumes.

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Notes: New Journals on Chinese, Soviet R&D

Two new quarterly translation journals, *Chinese Science and Technology* and *Science and Technology in the USSR,* are scheduled to begin publication this spring. Each will feature translations of official documents, reports, news articles and other materials concerning science, technology, and related matters. The Chinese journal is edited by Pierre M. Perolle, of Wheaton College (Mass.), who is a staff member at the National Academy of Sciences; the USSR journal is edited by Thane Gustafson, of Harvard.

Subscriptions ($50 for institutions, $15 for individuals) may be ordered from the publisher: M. E. Sharpe, Inc., 901 North Broadway, White Plains, New York 10603.

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Industry's spending for research and development reached $29.9 billion in 1977, an increase of 11 per cent from the previous year, according to a newly issued report by the National Science Foundation. The Foundation also reports that industrial employment of full-time equivalent scientists and engineers hit an all-time high, 400,000, at the beginning of 1978.

The report, NSF 79-302, is available, without charge, from the National Science Foundation, Division of Science Resource Studies, 1800 G St. Nw., Washington, DC 20550.

The White House has announced the following appointments to the President's Committee on the National Medal of Science, the government's highest award for science and technology:

W. Dale Compton, vice president for research, Ford Motor Co.
Carl Djerassi, professor of chemistry, Stanford
Mary Lowe Good, professor of chemistry, University of New Orleans
Leon M. Lederman, professor of physics, Columbia
Calvin C. Moore, dean of physical sciences, UC Berkeley
Dorothy Simon, director of research, AVCO Corp.
John B. Slaughter, assistant director, National Science Foundation
Steven Weinberg, professor of physics, Harvard
John R. Winnery, professor of engineering, UC Berkeley

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The 1978 annual report of the AAAS Committee on Scientific Freedom and Responsibility is available for $2 per copy from: American Association for the Advancement of Science, Committee on Scientific Freedom and Responsibility, 1515 Mass. Ave. Nw., Washington, DC 20005.

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